

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections and further examination are requested. Upon entry of this amendment, claims 21 and 27 are amended. Thus, only independent claims 21 and 27 are pending. No new matter has been added.

Rejections Under 35 U.S.C. §103(a)

Claims 21 and 27 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shintani (JP 11-080952) in view of Hidaka (JP 10-106441) and Kim et al.

Applicants submit that the claims as now pending are allowable over the cited prior art. Specifically, amended independent claim 21 recites a method of manufacturing a plasma display panel (PDP) comprising a process of forming a metal oxide film comprising introducing oxygen gas into a deposition room and controlling a partial pressure of the oxygen gas within a range from 3×10^{-3} Pa to 3×10^{-2} Pa, so as to restrain an amount of dangling bonds in the metal oxide film, and introducing another gas so as to increase an amount of the dangling bonds in the metal oxide film, the another gas including at least one gas selected from the group consisting of carbon monoxide and carbon dioxide into the deposition room, wherein the degree of vacuum in the deposition room is controlled within a predetermined range by adjusting an amount of an inert gas introduced into the deposition room.

This method enables stabilization of the physical properties of the MgO film, by introducing oxygen into the deposition room in the deposition process and controlling the partial pressure of the oxygen so as to restrain the amount of the dangling bonds in the MgO film, and introducing carbon monoxide or carbon dioxide, such that impurities are mingled into the film, thus increasing the amount of the dangling bonds.

The cited prior art fails to disclose or render obvious such a method. In particular, Shintani is cited as disclosing a process for forming an MgO film onto a substrate, including controlling the vacuum degree in a deposition room in a prescribed range, detecting the oxygen gas partial pressure in the deposition room, introducing oxygen gas into the deposition room, and controlling the oxygen partial pressure in a prescribed range. However, there is no disclosure in Shintani of controlling a partial pressure of the oxygen gas to restrain the amount of dangling bonds in the metal oxide film, and introducing monoxide or carbon dioxide so as to increase the

amount of the dangling bonds in the metal oxide film, as required by independent claim 21 of the present application.

Hidaka fails to overcome this deficiency of Shintani. In particular, Hidaka discloses controlling the partial pressure of oxygen in an evaporation device chamber. However, as with Shinatani, Hidaka fails to disclose controlling a partial pressure of the oxygen gas to restrain the amount of dangling bonds in the metal oxide film, and introducing carbon monoxide or carbon dioxide so as to increase the amount of the dangling bonds in the metal oxide film, as required by independent claim 21 of the present application.

Additionally, Kim fails to overcome the deficiencies of Shintani and Hidaka. In particular, Kim is cited by the Examiner as disclosing that the secondary emission coefficient changes for an MgO film with exposure to water vapor or carbon dioxide. However, there is no disclosure in Kim of controlling a partial pressure of the oxygen gas to restrain the amount of dangling bonds in the metal oxide film, and introducing carbon monoxide or carbon dioxide so as to increase the amount of the dangling bonds in the metal oxide film, as required by independent claim 21 of the present application.

Further, none of the references alone or in combination discloses or renders obvious controlling the degree of vacuum in the deposition room within a predetermined range by adjusting an amount of the inert gas introduced into the deposition room, as required by independent claim 21.

Moreover, there is no reasoning in the prior art to modify Shintani, Hidaka or Kim such that the combination thereof would have rendered independent claim 21 obvious. Therefore, Applicants submit that independent claim 21 is allowable over the cited prior art.

Applicants submit that independent claim 27 is allowable over the cited prior art for reasons similar to those set forth above. In particular, Applicants submit that the cited prior art fails to disclose or render obvious an apparatus for manufacturing a plasma display panel (PDP), comprising a gas-introducing means for introducing oxygen gas to restrain an amount of dangling bonds in a metal oxide film and another gas to increase an amount of the dangling bonds in the metal oxide film, the another gas including at least one gas selected from the group consisting of carbon monoxide and carbon dioxide into the deposition room, wherein the degree of vacuum in the deposition room is controlled within a predetermined range by adjusting an

amount of the inert gas introduced into the deposition room, as required by independent claim 27 of the present application.

Double Patenting

Claim 21 is provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claim 6 of co-pending Application No. 10/532672 in view of Hidaka and Kim.

Applicants submit that independent claim 21 is allowable for similar reasons to those set forth above. None of the cited prior art nor Application No. 10/532672 discloses or renders obvious a method of manufacturing a plasma display panel (PDP) comprising a process of forming a metal oxide film comprising introducing oxygen gas into a deposition room and controlling a partial pressure of the oxygen gas within a range from 3×10^{-3} Pa to 3×10^{-2} Pa, so as to restrain an amount of dangling bonds in the metal oxide film, and introducing another gas so as to increase an amount of the dangling bonds in the metal oxide film, the another gas including at least one gas selected from the group consisting of carbon monoxide and carbon dioxide into the deposition room, wherein the degree of vacuum in the deposition room is controlled within a predetermined range by adjusting an amount of an inert gas introduced into the deposition room, as required by independent claim 21 of the present application.

Conclusion

In view of the foregoing amendments and remarks, all of the claims now pending in this application are believed to be in condition for allowance. Reconsideration and favorable action are respectfully solicited.

Should the Examiner believe there are any remaining issues that must be resolved before this application can be allowed, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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/Jeffrey J. Howell/

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